

Pollution Prevention in Auto Body and Paint Shops

Waterborne Coatings

Most coatings manufacturers have developed waterborne color coatings to comply with European emissions requirements. Future changes in California air quality regulations are expected to lower the VOC limits allowed in coatings and require the use of waterborne refinish coatings. Waterborne and low VOC coatings technology is expected to continue to improve to meet the needs of the industry while maintaining regulatory compliance.

Regulatory changes

The California Air Resources Board (ARB) adopted a suggested control measure (SCM) for automotive coatings in October 2005. The purpose of the SCM is to improve consistency and enforceability among air district rules and to achieve VOC emissions reductions beginning in 2009. The SCM serves as a model that each air district may adopt to meet the state implementation plan and California Clean Air Act requirements. The South Coast Air Quality Management District (SCAQMD) has proposed to [amend their auto body coating operations rule](#) to conform to the suggested control measure. SCAQMD has conducted workshops and set a Board hearing for December 2005.

How do the regulatory changes affect shops?

Shops in some air districts will need to use waterborne and low VOC color coats and primers to comply with the reduced VOC limits in coatings regulations expected to become effective in January, 2009. Manufacturers have developed automotive coatings that can meet California's strict air regulations for volatile organic compound (VOC) emissions.

What are waterborne coatings?

The solvent component of automotive coatings allows for smooth and even application of pigment solids and then evaporates. Waterborne coatings contain water as the main solvent but also contain other solvents, such as glycol ethers, to improve application. These coatings make very good primers because they are resistant to heat and abrasion and provide excellent adhesion. Waterborne primers and primer-surfacers may have a VOC content as low as 1.2 lbs/gal.

Why use waterborne coatings?

There are several advantages to using waterborne coatings:

- Solvent-borne coatings contain VOCs and Hazardous Air Pollutants (HAP) including toluene, xylene, methyl ethyl ketone, and ethyl benzene.
- Waterborne coatings are less toxic, have low VOC levels, and are less flammable. Their use will reduce air emissions, improve worker health and safety and may decrease insurance costs.
- The products may cost less than their solvent-borne counterparts and require no thinners, additives, or hardeners.

- Compared to solvent-borne products, less product may be needed to cover the same surface area.
- The pot life of the waterborne products is much longer and unused coatings can be saved in a sealed container for the next use.
- Waterborne primer is best used where solvent primer would react with existing substrate materials or coatings.
- Paint guns can be cleaned with water or water-based solutions rather than paint thinner, acetone, or methyl acetate.

How to make it work

Some adjustments will be needed when changing from solvent-borne to waterborne primers. You may need to purchase new spray application equipment designed for waterborne coatings. Spray guns must be made with corrosion resistant materials on the inside, such as stainless steel or plastic. Work with your vendor to demonstrate new products at low or no cost and to provide hands-on training in your shop.

The curing time for waterborne coatings is much longer than that for solvent-borne coatings so you need to plan accordingly. Review your current procedures and schedule coating applications to allow for more drying time or use specialized drying equipment. For example, it may work best to apply primer to all cars and allow to dry overnight before applying the color and finish coatings the next day. Involve employees in planning your process scheduling and equipment changes.

Paint Curing Technology

Many large shops have installed spray booths with heating and air movement devices primarily to increase production by reducing curing time. These spray booths and drying equipment optimize flashing and curing conditions for both solvent-borne and waterborne coatings and will significantly reduce the time needed to cure waterborne coatings. You should consider future needs for curing waterborne and low-VOC coatings when purchasing a new spray booth or paint curing equipment. Check your local air district's permit requirements before planning to install this type of spray booth equipment. The vendor should be able to provide assistance.

Portable infrared or ultraviolet lamps may be used to considerably decrease flash and cure times after primer application. Review the paint manufacturer's guidelines for using these lamps with specific products when considering this technology. Ask the equipment distributor to provide a low cost or no cost demonstration period and training before purchasing.

Training

Have employees attend paint manufacturer training and I-CAR training. Encourage and provide incentives to employees to attend local pollution

prevention and compliance training provided by local regulatory and business assistance groups.

Vendor Contact Information

Global Finishing Solutions	http://globalfinishing.com	800-848-8738	Spray booth, recirculating heat system
USIItalia	http://www.usiofnorthamerica.com	877-874-6362	Spray booth, infrared preparation bay
PFC (Northern California)	http://www.pfcequipment.com	800 922-5501	Spray booth, curtain enclosures, infrared, UV curing lamps
DeVilbiss	http://www.autorefinishdevilbiss.com	800-445-3988	Paint drying system
JunAir Technologies	http://www.junairspraybooths.com/frame.htm	302-286-6462	Spray booth, air movement system